CLAIMS:

What is claimed is:

1. A memory switched switching apparatus comprising:

a memory queue for storing queuing elements, the memory having addresses that identify the flow_id of individual flows;

rowmin logic coupled to the memory for determining the highest priority queuing element for each row;

global min logic coupled to the rowmin logic for identifying the highest priority queuing element for each port; and

a scheduler coupled to the global min logic, the scheduler dequeuing the packets for each port by outputting the packet associated with the highest priority queuing element for each port identified by the global min logic.

2. The memory according to claim 1, wherein each row stores queuing elements for more than one output port.

3. The memory according to claim 3, wherein the row min logic includes a filtering element for excluding from the highest priority level determination for each port within each row the priority level of queuing elements associated with other ports.

4. The memory according to claim 1, wherein each row stores queuing elements for only one output port.

5. The memory according to claim 1, wherein each queuing element includes a pointer to a linked list of other queuing elements for the flow.

6. The memory according to claim 6, wherein each queuing element includes a valid flag which is set to valid when the queuing element stores a priority level of a packet in the queue and set to invalid after the queuing element is dequeued.

7. The memory according to claim 7, wherein the dequeued queuing element is replaced by the queuing element corresponding to the next packet in the flow after a dequeue operation.

8. A method of scheduling packets within a memory switched architecture, comprising:

maintaining a shared priority queue having queuing elements associated with multiple flows and multiple output ports;

determining a priority level for a newly arriving packet based on its flow identification and a priority level of a queuing entry in the priority queue corresponding to the flow identification; and

storing a new queuing element corresponding to the newly arriving packet in the priority queue based on its flow identification, the new queuing element including its determined priority level.

9. The method according to claim 8, wherein the shared priority queue includes rows comprising multiple columns for storing multiple queuing elements.

10. The method according to claim 9, wherein each queuing element stores an output port identifier specifying an output port for its corresponding packet.

11. The method according to claim 10, further comprising determining whether the new queuing element has the highest level of priority for the same output port.

12. The method according to claim 11, further comprising updating a rowmin value when the new queuing element has the highest level of priority for the same output port on a row.

13. The method according to claim 12, further comprising determining whether the new queuing element has the highest level of priority among all of the queuing elements in the priority queue for the same output port.

14. The method according to claim 13, further comprising updating a globalmin value when the new queuing element has the highest level of priority for the same output port within the priority queue.

15. The method according to claim 14, further comprising selecting an output port for dequeuing and outputting to the switching matrix the flow identifier and priority level corresponding to the global min value for the selected port.

16. The method according to claim 15, further comprising:

outputting a packet from the selected output port based on the flow identifier corresponding to the global min value for the selected port.